
DEPARTMENT OF THE INTERIOR**Fish and Wildlife Service****50 CFR Part 17****Endangered and Threatened Wildlife and Plants; Final Rule To Determine Five Texas Cave Invertebrates To Be Endangered Species**

AGENCY: Fish and Wildlife Service, Interior.

ACTION: Final rule.

SUMMARY: The Service determines endangered status under the authority of the Endangered Species Act of 1973, as amended, for five species of cave-dwelling, invertebrate animals in Texas. The five species are the Tooth Cave pseudoscorpion (*Microcreagris texana*), the Tooth Cave spider (*Leptoneta myopica*), the Bee Creek Cave harvestman (*Texella reddelli*), the Tooth Cave ground beetle (*Rhadine persephone*), and the Kretschmarr Cave mold beetle (*Texamaurops reddelli*). Each of these species is known from only six or fewer small, shallow, dry caves near Austin in Travis and Williamson Counties, Texas. Urban, industrial, and highway expansion are planned or ongoing in the area containing the cave habitat of these species. This development could result in filling or collapse of these shallow caves, disturbances of water drainage patterns that affect cave habitat, introduction of exotic competitive and predatory insects and other organisms,

and pollution of the cave systems with pesticides, fertilizers, oils, and other harmful substances. Final determination that these five species are endangered implements for them the protections provided by the Endangered Species Act.

EFFECTIVE DATE: September 16, 1988.

ADDRESSES: The complete file for this rule is available for inspection, by appointment, during normal business hours at the Service's Regional Office of Endangered Species, 500 Gold Avenue SW., Albuquerque, New Mexico 87103.

FOR FURTHER INFORMATION CONTACT: Dr. Steven M. Chambers, Fish and Wildlife Biologist, U.S. Fish and Wildlife Service Regional Office, Albuquerque, New Mexico (See ADDRESSES above) (505/766-3972 or FTS 474-3972).

SUPPLEMENTARY INFORMATION:

Effective Date

The usual 30-day delay between date of publication of a final rule and its effective date may be waived for cause, as provided by 50 CFR 424.18(b)(1) and by the Administrative Procedure Act (5 U.S.C. 553(d)(3)). The Service finds that this period be waived for this rule because immediate protection is needed to meet the ongoing threat of construction activities that are taking place on land that includes all or a major portion of each of the subject species' habitat.

Background

The Tooth Cave pseudoscorpion, *Microcreagris texana* (family Neobisiidae), was first described by Muchmore (1969) from a specimen collected in Tooth Cave, Travis County, by James Reddell in 1965. It reaches a length of about 4 millimeters (mm) (about $\frac{1}{8}$ inch) and resembles a tiny, tailless scorpion. Pseudoscorpions lack a stinger and are harmless to humans. They use their pincers to prey on small insects and other arthropods. The Tooth Cave pseudoscorpion is eyeless and troglomorphic (lives only in caves). It is known only from Tooth and Amber Caves, both in Travis County, Texas.

The Tooth Cave spider, *Leptoneta myopica* (family Leptonetidae), was first collected by James Reddell in 1963, and later described by Gertsch (1974). It has been found only in Tooth Cave, Travis County, Texas. This spider is very small, up to 1.6 mm (about $\frac{1}{8}$ inch) in total length, pale colored, and has relatively long legs. It is a troglomorphic, although reduced eyes are present. The Tooth Cave spider is sedentary and spins webs from the ceiling and walls of Tooth Cave.

The Bee Creek Cave harvestman, *Texella reddelli* (family Phalangodidae), was first described by Goodnight and Goodnight (1967) from a specimen collected by James Reddell and David McKenzie from Bee Creek Cave (erroneously reported as "Pine Creek Cave"), Travis County. This light yellowish-brown harvestman has relatively long legs that extend from a small body (2 mm, or less than $\frac{1}{8}$ inch, in length). It is an eyeless troglomorphic and is probably predatory. The Bee Creek Cave harvestman lives in Tooth, Bee Creek, McDonald, Weldon, and Bone Caves in Travis and Williamson Counties, Texas. The *Texella* reported by Reddell (1984) from Root Cave, Travis County, may also be this species.

The Tooth Cave ground beetle, *Rhadine persephone* (family Carabidae), was first described by Barr (1974) from specimens collected in the Tooth Cave by W.M. Andrews, R.W. Mitchell, and T.C. Barr in 1965. This species is a small (7-8 mm or about $\frac{3}{8}$ inch in length), reddish-brown beetle. It is troglomorphic and has only rudimentary eyes. It probably feeds on cave cricket eggs, which have been determined to be a major food of another troglomorphic species of *Rhadine* (Mitchell 1968). The Tooth Cave ground beetle is known only from Tooth and Kretschmarr Caves, Travis County, Texas.

The Kretschmarr Cave mold beetle, *Texamaurops reddelli*, was first described by Barr and Steeves (1963) from a specimen collected in Kretschmarr Cave by James R. Reddell and David McKenzie in 1963. This species is a very small (less than 3 mm, or about $\frac{1}{8}$ inch, in length) dark-colored, short-winged, beetle with elongated legs. This member of the family Pselaphidae is an eyeless troglomorphic and is known only from Kretschmarr, Amber, Tooth, and Coffin Caves in Travis and Williamson Counties, Texas.

The caves inhabited by these five species are relatively small. The largest, McDonald Cave, consists of less than 60 meters (m) (about 200 feet) of passage, and most of the others are considerably smaller. These caves occur in isolated "islands" of the Edwards Limestone formation that were separated from one another when stream channels cut through the overlying limestone to lower rock layers. This fragmentation of habitat has resulted in the isolation of groups of caves that have developed their own, highly localized faunas.

In addition to the five species that are the subject of this final rule, these caves and others in the area support a number of other uncommon and scientifically significant species. Available habitat of this type is very limited, and many of

these caves have been lost or are threatened with imminent loss.

The Service was first notified of the possible status of these five species by an August 20, 1984, letter from the Travis Audubon Society, Austin, Texas. The Conservation Committee of the Travis Audubon Society then petitioned the Service on February 8, 1985, to list these five and one other species (the Tooth Cave rove beetle, *Cylindropsis* sp.) as endangered. The Service evaluated this petition and on May 1, 1985, found that the petition did present substantial information indicating that the requested action may be warranted. A notice of that finding was published in the *Federal Register* on July 18, 1985 (50 FR 29238). On February 19, 1986, the Service found that the petitioned action was warranted but that such action was precluded by work on other pending proposals, in accordance with section 4(b)(3)(iii) of the Act. A notice of that finding was published on August 20, 1986 (51 FR 29672). On July 1, 1987 (52 FR 24487), the Service published a notice that the petitioned action was again warranted but precluded for the five species addressed in the present final rule. That same notice also announced the finding that listing was not warranted for the sixth species named in the petition, the Tooth Cave blind rove beetle (*Cylindropsis* sp.). This conclusion was based on the determination that the single known specimen was in such poor condition that it could not provide adequate material for taxonomic evaluation and description; furthermore, the best available scientific information indicates that the taxon it represents is extinct. Endangered status for these five species was proposed on April 19, 1988 (53 FR 12787).

Summary of Comments and Recommendations

In the April 19, 1988, proposed rule (53 FR 12787) and associated notifications, all interested parties were requested to submit factual reports or information that might contribute to the development of a final rule. Appropriate State agencies, county governments, Federal agencies, scientific organizations, and other interested parties were contacted and requested to comment. A newspaper notice was published in the *American Statesman* (Austin, Texas) on May 25, 1988, which invited general public comment. Nine comments were received and are discussed below. The proposal is supported by the City of Austin, three organizations, and four individuals. A letter from the U.S. Department of Housing and Urban

Development contained no substantive comments on the proposed listings. No public hearing was requested or held.

Four commenters urged that the Service prepare an emergency listing for the five Texas cave invertebrates. The Service's expedited preparation and review of this final rule is in lieu of an emergency listing.

The City of Austin, three organizations, and three individuals requested that critical habitat be designated for these five species. The Service's reasons for not designating critical habitat are explained in the Critical Habitat section of this rule. Designation of critical habitat would not be prudent at this time because any benefits from that designation would be outweighed by the increase in unauthorized visitation and vandalism of the caves that would result from publication of precise critical habitat descriptions and maps. Although the Service agrees with one commenter that listing itself draws attention, to some extent, to the localities of these species, publication of maps and descriptions in local newspapers, which is required when designating critical habitat, would disseminate exact locality information to a much larger segment of the public. The Service notes that, even without critical habitat designation, the habitats of these species receive protection under section 7 of the Act.

Eight commenters provided information on development activities in the area, such as deep trenching, road and utility construction, and cave destruction. They expressed concern about these serious threats to the five species. The Service recognizes the potential negative impacts of these activities and the present listings are in response to them. Both direct effects, such as those mentioned above, and indirect effects, such as alteration of drainage patterns, have been considered.

Three commenters discussed the threat of fire ants and their effect on native cave fauna. The Service recognized the threat of exotic insects in the original proposal (Factor C).

One commenter urged emergency buying of an easement or actual purchase of the cave areas. These options will be considered by the Service in development of a recovery plan for these species.

Two commenters expressed support for placing grates over cave entrances, but expressed concern that grates be properly designed. The Service agrees that grates are needed and that their design must take into account the biological needs of the species.

Summary of Factors Affecting the Species

Section 4(a)(1) of the Endangered Species Act (16 U.S.C. 1531 *et seq.*) and regulations (50 CFR Part 424) promulgated to implement the listing provisions of the Act set forth the procedures for adding species to the Federal Lists. A species may be determined to be an endangered or threatened species due to one or more of the five factors described in section 4(a)(1). These factors and their application to the Tooth Cave pseudoscorpion (*Microcreagris texana*), Tooth Cave spider (*Leptoneta myopica*), Bee Creek Cave harvestman (*Texella reddeni*), Tooth Cave ground beetle (*Rhadine persephone*), and Kretschmarr Cave mold beetle (*Texamaurops reddeni*) are as follows:

A. *The present or threatened destruction, modification, or curtailment of its habitat or range.* The primary threat to the five species comes from potential loss of habitat owing to ongoing development activities. Proximity of the caves inhabited by these species to the City of Austin makes them vulnerable to the continuing expansion of the Austin metropolitan area. Road, industrial, residential, and commercial developments that would adversely affect these species have already begun. Tooth, Amber, Kretschmarr, Kretschmarr Salamander, McDonald, and Root Caves are in an area for which a major residential, commercial, and industrial development has been proposed, and preliminary clearing and digging has begun. This area includes the entire known ranges of the Tooth Cave pseudoscorpion, the Tooth Cave spider, and the Tooth Cave ground beetle, all but one known locality of the Kretschmarr Cave mold beetle, and a large portion of the habitat of the Bee Creek Cave harvestman. Unless proper safeguards can be devised, this development could result in the filling in or collapsing of caves during road and building site preparation, and in alteration of drainage patterns that could affect the cave habitat. These species inhabit dry cave habitats that depend on some infiltration of groundwater. Disruption of this input would be harmful, as would excess input of water that would flood the caves. Flooding of habitat could also result from proposed no-discharge sewage effluent irrigation. Development of this area could also increase the flow of sediment, pesticides, fertilizers, and general urban runoff into the caves. Land alterations in this area were noted earlier (Reddell 1984), and have recently intensified. Landmarks have been

altered so that it is difficult to relocate some caves, and large boulders have been placed in the entrance of Kretschmarr Cave on two occasions (Reddell 1984). This cave is an important habitat for the beetles included in this proposal. Development in this area is also likely to increase human visitation and vandalism in the caves, which are so small that even occasional episodes could adversely alter the cave habitat.

Tooth Cave is near one alternative route for a proposed water pipeline from Lake Travis. Even if it is bypassed by the direct path of the pipeline, operation of heavy construction equipment or blasting could adversely affect Tooth Cave and other caves in the area inhabited by these species.

Weldon Cave, which supports a population of the Bee Creek Cave harvestman, is in or very near the path of a recent road extension, and may no longer exist. Residential development is also occurring in this area, and is likely to be stimulated by the improved access provided by this road.

It is likely that most, if not all, of the five cave species occupied other caves that have already been lost to earlier development. This may have been the fate of Coffin Cave, which is historic habitat of the Tooth Cave mold beetle. Recent attempts to relocate this cave have not been successful.

B. *Overutilization for commercial, recreational, scientific, or educational purposes.* No threat from overutilization of these species is known to exist at this time. Collection for scientific or educational purposes could become a threat if localities become generally known.

C. *Disease or predation.* As the human population of the area around these caves increases, the problems of predation by and competition with exotic (non-native) species also increases. Human habitation introduces a complement of exotic invertebrate species into many areas, particularly in semiarid areas such as the plateaus northwest of Austin. These predatory species are transported into the area in various accompaniments of human occupation, including landscaping plants. Buildings, lawns, and shrubbery provide habitat from which these highly adaptable species can disperse. The relative accessibility of the shallow caves leaves them especially vulnerable to invasion by introduced invertebrate predators or competitors such as sowbugs, cockroaches, and fire ants.

D. *The inadequacy of existing regulatory mechanisms.* There are currently no laws that protect any of these species or that directly address

protection of their habitat. Cave protection laws of the City of Austin do not apply because these areas are all outside the city limits.

E. Other natural or manmade factors affecting its continued existence. These species are extremely vulnerable to losses because of their severely limited range and habitat and because of the naturally limited ability to colonize new habitats. These troglobitic species have little or no ability to move appreciable distances on the surface. The division of the limestone habitat into "islands" limits the mobility of the species through channels within the limestone. Moisture regimes, food supply, and other factors may also limit subsurface migrations and may account for the different distribution patterns seen among these five species.

The specific climatic factors within the caves, such as humidity, are affected by input through the cave entrance, the overlying soils, and the rocks in which the caves are formed. As discussed under factor A above, surface alterations can affect these conditions, as well as facilitate the flow of pollutants into the habitat.

The very small size of these habitats, in addition to the fragile nature of cave ecosystems in general, make these species vulnerable to even isolated acts of vandalism. As the human population of the area increases, the likelihood of such acts also increases.

The Service has carefully assessed the best scientific and commercial information available regarding the past, present, and future threats faced by these species in determining to make this rule final. Based on this evaluation, the preferred action is to list the Tooth Cave pseudoscorpion, the Tooth Cave spider, the Bee Creek Cave harvestman, the Tooth Cave ground beetle, and the Kretschmarr Cave mold beetle as endangered species. These species require the maximum possible protection provided by the Act because their extremely small, vulnerable, and limited habitats are within an area that can be expected to experience continued pressures from economic and population growth. Critical habitat has not been determined for reasons given in the next section.

Critical Habitat

Section 4(a)(3) of the Act, as amended, requires that, to the maximum extent prudent and determinable, the Secretary designate any habitat of a species which is considered to be critical habitat at the time the species is determined to be endangered or threatened. The Service finds that designation of critical habitat is not prudent for these species at this

time. Their cave habitats are at the edge of an expanding urban area with a growing population. Increased human population density increases the likelihood of acts of vandalism that could irreversibly damage the caves. All involved parties and land owners will be notified of the location and importance of protecting these species' habitats. Protection of these habitats will be addressed through the recovery process and through the section 7 jeopardy standard. Therefore, it would not be prudent to determine critical habitat for these species at this time.

Available Conservation Measures

Conservation measures provided to species listed as endangered or threatened under the Endangered Species Act include recognition, recovery actions, requirements for Federal protection, and prohibitions against certain practices. Recognition through listing encourages and results in conservation actions by Federal, State, and private agencies, groups, and individuals. The Endangered Species Act provides for possible land acquisition and cooperation with the States and requires that recovery actions be carried out for all listed species. Such actions are initiated by the Service following listing. The protection required of Federal agencies and the prohibitions against taking and harm are discussed, in part, below.

Section 7(a) of the Act, as amended, requires Federal agencies to evaluate their actions with respect to any species that is proposed or listed as endangered or threatened and with respect to its critical habitat, if any is being designated. Regulations implementing this interagency cooperation provision of the Act are codified at 50 CFR Part 402. Section 7(a)(2) requires Federal agencies to ensure that activities they authorize, fund, or carry out are not likely to jeopardize the continued existence of a listed species or to destroy or adversely modify its critical habitat. If a Federal action may affect a listed species or its critical habitat, the responsible Federal agency must enter into formal consultation with the Service. No Federal involvement has been identified at this time. As development progresses, the Federal Department of Housing and Urban Development, the Federal Highway Administration, and the Environmental Protection Agency may become involved in funding or permitting projects. Any involvement by these agencies in development in the area of these caves would be a subject of consultation with the Service.

Section 9 of the Act and implementing regulations found at 50 CFR 17.21 set forth a series of general prohibitions and exceptions that apply to all endangered wildlife. These prohibitions, in part, make it illegal for any person subject to the jurisdiction of the United States to take, import or export, ship in interstate commerce in the course of commercial activity, or sell or offer for sale in interstate or foreign commerce any endangered fish and wildlife species. It also is illegal to possess, sell, deliver, carry, transport, or ship any such wildlife that has been taken illegally. Certain exceptions would apply to agents of the Service and State conservation agencies.

Permits may be issued to carry out otherwise prohibited activities involving endangered wildlife species under certain circumstances. Regulations governing permits are at 50 CFR 17.22 and 17.23. Such permits are available for scientific purposes, to enhance the propagation or survival of the species, and/or for incidental take in connection with otherwise lawful activities.

National Environmental Policy Act

The Fish and Wildlife Service has determined that an Environmental Assessment, as defined under the authority of the National Environmental Policy Act of 1969, need not be prepared in connection with regulations adopted pursuant to section 4(a) of the Endangered Species Act of 1973, as amended. A notice outlining the Service's reasons for this determination was published in the *Federal Register* on October 25, 1983 (48 FR 49244).

References Cited

- Barr, T.C., Jr. 1974. Revision of *Rhadine* LeConte (Coleoptera, Carabidae). I. The *subterranean* group. American Museum Novitates No. 2539. 30 pp.
- Barr, T.C., Jr. and H.R. Steeves, Jr. 1963. *Texamaurops*, a new genus of pselaphids from caves, in central Texas (Coleoptera: Pselaphidae). The Coleopterists' Bulletin 17:117-120.
- Gertsch, W.J. 1974. The spider family Leptonetidae in North America. The Journal of Arachnology 1:145-203.
- Goodnight, C.J. and M.L. Goodnight. 1967. Oplionids from Texas caves (Opliones, Phalangodidae). American Museum Novitates No. 2301. 8 pp.
- Mitchell, R.W. 1968. Food and feeding habits of the troglobitic carabid beetle *Rhadine subterranean*. International Journal of Speleology 3:249-270.
- Muchmore, W.B. 1969. New species and records of cavernicolous pseudoscorpions of the genus *Microcreagris* (Arachnida, Chelonethida, Neobisidae, Ideobisiinae). American Museum Novitates No. 2932. 21 pp.

Reddell, J.R. 1984. Report on the Caves and Cave Fauna of the Parke, Travis County, Texas. Unpublished report to the Texas System of Natural Laboratories. 25 pp.

Author

The primary authors of this final rule are Dr. Steven M. Chambers, Fish and Wildlife Biologist, and Ms. Sonja Jahrsdoerfer, Wildlife Biologist, Office of Endangered Species, U.S. Fish and Wildlife Service, P.O. Box 1306, Albuquerque, New Mexico 87103 (505/766-3972 or FTS 474-3972).

List of Subjects in 50 CFR Part 17

Endangered and threatened wildlife, Fish, Marine mammals, Plants (agriculture).

Final Regulations Promulgation

Accordingly, Part 17, Subchapter B of Chapter I, Title 50 of the Code of Federal Regulations, is amended as set forth below:

PART 17—[AMENDED]

1. The authority citation for Part 17 continues to read as follows:

Authority: Pub. L. 93-205, 87 Stat. 884; Pub. L. 94-359, 90 Stat. 911; Pub. L. 95-632, 92 Stat. 3751; Pub. L. 96-159, 93 Stat. 1225; Pub. L. 97-304, 96 Stat. 1411 (16 U.S.C. 1531 *et seq.*); Pub. L. 99-625, 100 Stat. 3500 (1986), unless otherwise noted.

2. Amend § 17.11(h) by establishing a new taxonomic group, "Arachnids", with its entries, to follow the taxonomic group, "Insects", on the List of Endangered and Threatened Wildlife.

3. Section 17.11(h) is further amended by adding the following entries for Beetles, in alphabetical order under the taxonomic group heading, "Insects", to the List of Endangered and Threatened Wildlife.

§ 17.11 Endangered and threatened wildlife.

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Species		Historic range	Vertebrate population where endangered or threatened	Status	When listed	Critical habitat	Special rules
Common name	Scientific name						
Insects							
Beetle, Kretschmarr Cave mold.....	<i>Texamaurops reddelli</i>	U.S.A. (TX).....	NA	E	327	NA	NA
Beetle, Tooth Cave ground.....	<i>Rhadine persephone</i>	U.S.A. (TX).....	NA	E	327	NA	NA
Arachnids							
Harvestman, Bee Creek Cave.....	<i>Taxella reddelli</i>	U.S.A. (TX).....	NA	E	327	NA	NA
Pseudoscorpion, Tooth Cave.....	<i>Microcreagnis texana</i>	U.S.A. (TX).....	NA	E	327	NA	NA
Spider, Tooth Cave.....	<i>Leptoneta myopica</i>	U.S.A. (TX).....	NA	E	327	NA	NA

Dated: September 8, 1988.

Susan Recce,

Acting Assistant Secretary for Fish and Wildlife and Parks.

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